13

PHYSICOTHERAPY OF TUBERCULOSIS

By DR. J. A. RIVIÈRE of Paris, France

ROYAL COLLEGE
12 JUN 30
LIBRARY

Reprinted from "The Philadelphia Journal of Physiological Therapeutics,"
March and June Issues, 1913

Digitized by the Internet Archive
in 2016

https://archive.org/details/b22468481

Physicotherapy of Tuberculosis *

In my communication, entitled "*Treatment of the Malignant Tumors of Tuberculosis by the Effluvations and Sparks of High Frequency*" (First International Congress on Medical Electrology and Radiology, Paris, July, 1900), I was the first to insist on the excellent effects of alto-frequent effluvation in the treatment of local tuberculoses, and tuberculosis of the bones in particular. In a communication entitled "*Treatment of Tuberculosis by High Frequency Currents*" (British Congress on Tuberculosis, London, 1902), I spoke, after Doumer, on pulmonary tuberculosis, and again insisted on localized tuberculoses. I reverted to the same subject in "*Considerations of the True Etiology of Tuberculosis and Its Physicotherapic Treatment*" (American Congress on Tuberculosis, Atlanta, Georgia, April, 1905); and in "*Tuberculosis Considered as an Endogenous Malady*" (Congress of the American Anti-Tuberculosis League, Atlantic City, U. S. A., June, 1907).

I have no intention today of speaking about the etiology of tuberculosis.

Clinically speaking, I will only say that I believe much less in contagion than in the great nocuity of intoxications in general and of auto-intoxication in particular.

As we said in our communication on "Atmotherapy" (First French Congress on Climatotherapy and Urban Hygiene, Nice, April, 1904), and in "Ozonotherapy" (Second French Congress on Climatotherapy, April, 1905), the air expired and taken in again by the lungs is for the most part the origin of cases of pulmonary tuberculosis. On the other hand, the abuse of meat food, by poisoning the nutrition at its most active sources, creates a predisposition to tuberculosis. Phthisis is the last result of a multiple intoxication due to virulent organic waste-products of the cells; the digestive tube has as great a share as the aerial tree in the spontaneous generation of Koch's bacilli. It is well known that the fatty acids introduced into the blood by alimentary fermentation can produce the gravest anatomo-pathological lesions in the pulmonary tissue. It is known also that dyspepsia, due to drugs or otherwise, and gastro-enteritis, alcoholism, etc., come in as singular complications to tuberculosis of the lungs. Finally, physicotherapy (air, repose, alimentation) has been for a number of years the rational treatment of "poitrinaires," often to the exclusion of all pharmaceutical remedies, now recognized to be more harmful than useful, although prescribed in accordance with tradition.

Before entering on the details of the cure as we understand it, we should like to insist on the possibility of introducing a really profitable prophylaxis. This may be summed up in two phrases: Watch the digestive tube; watch the respiration. The onset of tuberculosis is marked invariably by "malaise" (feeling unwell), fatigue, loss of flesh, with headache, insomnia, anorexia, loss of strength. Even before any stethoscopic signs on the part of the lungs, it is noticed that the liver and spleen have increased in size, and that there is a little rise of temperature, etc. The point is, at this period, to free the organism from the toxins which are besieging it, in order to avoid bacillary eclosion.

---

* Communication made to the Second Spanish International Congress on Tuberculosis at Saint Sebastian, September 9-16, 1912.

A reasonable use of calomel, castor oil, diuretics and diaphoretics (warm drinks, frictions), methodical ventilation of the lungs by pure air and ozone, suppression of intoxication by meat foods: such is the method to pursue, in order to free the economy from its toxic débris and forestall microbic generation. The supreme preventive medium rests in a good hygiene of the aerial tree and the digestive tube. *Tuberculosis is impossible in a subject who breathes healthy air, and whose stomach, intestines and hepato-renal discharges act in a satisfactory manner.* On the other hand, permanent aëration and atmotherapy, while enriching the blood and fortifying the nervous system, purges both the humors and tissues, establishes perfect cellular exercise, and favors organic renovation while guaranteeing the assimilation of a simple food régime (with very little meat and rather sparing), without overloading or waste products. When once the molecular interchanges of our inmost metabolism are perfectly assured, the invading microbes are forced to beat a retreat in the presence of intensive vitalization, which is inimical to all functional decay. Everything which combines to combat auto-intoxication and to tone up nutrition effectively, to stimulate assimilation, to act on the trophic nervous system, will also combine in the cure of the tuberculous.

Under these conditions, we can gauge the rôle which has devolved on physicotherapy in the rational treatment of tuberculosis. In fact, all the various applications concerned in this method (comprising electricity, hydrotherapy, phototherapy, thermotherapy, mechanotherapy, various gymnastic exercises, atmotherapy, etc.), combine in the symptomatic cure of the malady, and assist the retention of a reserve value in the various functions of molecular vitality, as well as in the reparation of perverted trophic functions. The richness of the natural resources which we draw attention to allows us to adapt the potential of treatment to all forms and phases of tuberculosis: for the physicotherapic agents must be administered and formulated in "doses" like medicines adapted to various morbid conditions and even to personal idiosyncrasies. Without a complete and perfect equipment, the practitioner cannot hope to obtain a scale of cures graduated with sufficient delicacy to hope for useful dynamic reactions. Air, water, heat, electricity, have thousands of methods of application. according to whether we need congestion or decongestion, to reduce swelling or provoke stases (Bier's method), to stimulate or soothe the muscular fibres. eliminate scoriæ and morbid secretions; cleanse or feed alveolar hæmatosis. facilitate absorption and remove the barriers set up by auto-intoxication. To make use of a familiar figure of speech. we might say that our method of practice has for its final goal to prevent the "*cohabitation of the dead with the living*," that is to say, to chase away anatomic elements which are cadaverous or bacteric, as well as toxins and leucomaines manufactured by the cells. It thus happens that, when nutritive osmosis has been increased, nervous energy accelerated and the hematic budget well balanced, reparation and recorporation are not slow to follow. The biochemical deviation, in fact, which constitutes tuberculosis is. therefore, amenable to physicotherapy.

It would need a volume to detail all the methodical applications. I will just limit myself here to bringing forward the principal ones, those which are less disputed and most in vogue.

In electrotherapy, the effluvations and sparks of High Frequency, when judiciously applied, enjoy universal repute for the cure of tuberculosis. I was the first to bring this action to light in a communication made on July 28, 1900, to the International Congress on Electrology and Radiology, held in Paris from July to August, 1900.*

In this communication, I attributed to High Frequency, *1st.* A thermo-electro-chemical action, having for its effect the elimination of new formation of tissues, as well as micro-organisms.

2nd. A curative tropho-neurotic action, restoring the vital processes to their integral condition, firstly by local phagocytosis, and next by amelioration of the patient's general condition. In 1902 at the British Congress on Tuberculosis, I returned at great length to this question. and supported my arguments with several observations, which will be found in my Annals of Physico-Therapy, as well as an important communication on the same subject at the Atlanta (Georgia) Congress.

In 1908-9, the paper published by M. Thielli, in the *Annals of Electro-Biology*, has enabled us to put our finger on the exact point when the bi-polar effluvation of high tension is capable of modifying the tuberculosis soil, of arresting organic demineralisation, and restoring to the hæmo-leucocyte formula its normal percentage. We may affirm, in fact, that no other method is more prompt to raise the respiratory co-efficient, nor does any other develop with more certitude the ventilating capacity of the apices. Experiments made on guinea pigs by Lagriffoul and Denoyes (1901) corroborate, moreover, the clinical observations which we have published.

Personally, I have always seen alto-frequent effluvations and sparks act efficaciously against pain, cough and expectoration (the three cardinal symptoms of phthisis): it also facilitates absorption of exsudata and disappearance of dyspnœa, and wins back appetite and sleep. To sum up. the d'Arsonval currents modify local and general combustion, increase vascular tension in the lungs, and endow the nutritive exchanges as well as cellular life with extraordinary activity. But local revulsion and circulatory drainage above all explain why this therapeutic method restrains exaggerated respiratory combustion, thins out cellular toxins. and increases the resistance of the organism to microbic proliferation. The heightening of the digestive and nutritive forces, the awakening of aptitude for work, regularisation of diuresis and other emunctoria (suppression of night-sweats), seem to be rather the direct consequences of the reconstitution of blood impoverished in oxyhæmoglobin by morbid function.

Hæmoptysis and fever constitute for us a contra-indication for electric treatment, and we then advise calomel and castor oil, so as to stimulate the elimination of toxin.

Yet other electrical methods can be employed with success in tuberculous cases, baths and static douches to combat nervousness, insomnia, and as sedative media for the general sensitive system. Continuous currents against neuralgias and intercostal neuritis, dyspnœa and asthenia, hydro-electric baths as a regulator for the circulation, and as an antiphlogistic, Röntgen rays as bactericide and resolvent of lymphatic neo-formations (bronchial adenopathy).

---

* In order to be just, I must recognize that since 1898, Prof. Doumer showed, in a learned note published in the *Annals of Electrobiology* (Nov. 15, 1898), the well defined action of High Frequency in augmenting the defensive reaction of the organism.

Actinotherapy renders good service especially in the case of torpid and sclerosing forms of pulmonary bacillus-formation, at a time when the process demands excitation in the case of subjects who are rendered insufficiently erethistic by general anæmia and neurasthenia. Actinotherapy, being a dilator of the vessels, hyperæmic and sedative at one and the same time, a repairer of globular damage and restorer of equilibrium to the nervous system, soothes oppression and tachycardia, regulates the temperature, encourages alimentation and digestion. Let us remember that tuberculosis is a disease of darkness, and that deprivation of light plays as great a part in its pathogeny as deprivation of air itself. The bacillus of Koch accomplishes its dire task in the shadows, and in an organism which is intact, very often with hereditary taint. In this way the curative value of actinotherapy is explained, as well as that of heliotherapy, which is its most natural form. The radiating energy is absorbed by the protoplasm, which derives from it a kind of dynamic and vitalising charge (M. de Laroquette). Physiological opinion is divided on the subject of a direct bactericidal power; but one thing is certain, and that is, by the stimulation imparted to the means of defence, the therapeutic radiation produces incontestable bactericidal effects on the germs enclosed in the alveoli, which successfully resist all general and local treatment. Actinotherapy, therefore, is not to be despised, as we have shown by the phthisio therapeutist. *Ozonised inhalations* increase the field of respiration and prolong expiration, a fact which augments the capacity for pulmonary ventilation. It is, in fact, vital air domesticated; the air which, by its oxidising force and its power of penetration, is most capable of restoring to the pulmonary mucosa its physiological condition. Personally, I have succeeded in increasing the curative value of ozone by joining to it the volatile, antiseptic or balsamic principles of creosote, eucalyptol, iodoform or menthol. I thus obtain a veritable gaseous dressing which is both bactericidal and soothing, ozone being the medium. It is chiefly in catarrhal forms and in fetid bronchitis which accompanies certain tuberculoses that we must have recourse to this excellent method for modifying alveolar epithelism, and diminishing the virulence of purulent expectoration. This medicated atmiatry has the double advantage of controlling the digestive passages and of possessing a direct detersive action.

Mechanotherapy is also a powerful auxiliary. It is the only truly rational gymnastic method of expanding the thorax, fortifying and facilitating the *heart's* action; facilitating visceral secretions and promoting active assimilation. Combined with hydrotherapy and carbonic acid gas baths, it increases resistance and tones up the condition of the thorax in an astonishing manner. Is it not the aim of all respiratory gymnastics to clear out the alveoli, to facilitate local muscular development, to destroy pleural adhesions by mechanical movements applied to the chest? Under these conditions, the poisoned air, hot-bed of impurity, no longer stagnates in the lungs, whose expansion is favored by such an overpowering influx of air that the bronchioli become permeated with it. One can scarcely imagine to what an extent local circulatory distress, or myasthenia, and the muscular atrophy of the intercostals contribute to make the phthisic patient suffer and aggravate his condition! Mechanotherapy and Swedish gymnastics constitute the natural remedies for these frequent complications.

One word more, before concluding, on the treatment of local tuberculoses. Without underestimating the action of X-rays, I think (and I was the first to publish the fact) that the main electrotherapeutic treatment rests with the effluvia and high-frequency sparks, whether we are dealing with ganglionary, osteo-articular, visceral or testicular lesions, we shall always obtain anatomic cure by the transfixion of the effluvation and super-activity imparted to the cells. It is a kind of *intimate* massage, *histological* (Picard), which is furnished by the electro-thermo-chemical vibratory wave; its penetrating, but not too violent, power modifies the most impaired tissues. The adenopathic masses, especially, dissolve very rapidly by this method. In osteo-arthritis, especially with fistula, retrogression is slower, but cure follows, as a rule, even in serious cases given up by surgery. In tuberculous orchitis, the increase in the local vitality of the tissues is no less manifest. Not only does the treatment exercise an elective action on the morbid tissues, but it puts an obstacle in the way of general infection; facilitates retrogressions and always gives very clean scars, while the lancet gives such ugly ones!

Lupus, that type of cutaneous tuberculosis, can today be radically cured in a few weeks by the methodical combination of phototherapy, radiotherapy, high frequency and electro-puncture. Phototherapy, as we have seen, is bactericidal by the chemical rays of the spectrum; radiotherapy is analgesic, and with a tendency to a sclerosal process: alto-frequency is decongestive by vaso-constriction, favors diapedesis, phagacytosis, and cicatrisation. As to electrolysis, it is a galvano-caustic process often indispensable for accelerating the definitive modification of the pathological tissues, as well as the perfect inodular repair of the lipoma which have resisted other physicotherapic agents.

CONCLUSIONS.

(1) Clinical observations show us the endogenous origin of tuberculosis, the result of manifold intoxications, of which Koch's bacillus is only the result or the witness.

(2) Prophylaxis consists in due care being given to what I have called the main sewer of the organism, and to the ærial tree; suppression of all superfluous meat food, which is only poisoning, according to the ideas which we were the first to put forward. The dangers of contagion are very limited. Combat auto-intoxication, eliminate waste matter, restore trophism and nervism, stimulate assimilation; this sums up the whole of rational phthisiotherapy.

(3) All the physical agents domesticated, formulated and dosed conveniently, are adapted to the cure of chest

diseases; the sole condition being that we should possess an equipment complete and perfect enough to obtain all the gradations of the therapeutic scale.

(4) I was the first to show (1900) the heroic power of effluvations and sparks of high frequency in osseous tuberculosis. Our observations have been confirmed on all sides for the last twelve years. Other electric methods should not be neglected, but they have not, by any means, the specific curative value of high frequency.

(5) Actinotherapy is excellent in torpid forms. Ozonised balsamo-antiseptic inhalations triumph over catarrhal and purulent complications. Mechanotherapy is an excellent method of respiratory re-education.

(6) The high frequency effluvation and sparks, moreover, give the best results in the treatment of local tuberculoses (adenopathiæ, osteo-arthrites, tuberculous orchitis, lupus, etc.). The curative penetrating power and elective action of detersion on morbid tissues are, in this case, superior to the Röntgen rays themselves, as we have shown in our works on the effect of high frequency scintillation in cancer.